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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: John R. Doner	:	
	:	Art Unit: 2123
Serial No.: 09/751,362	:	
	:	Examiner:
Filed: December 28, 2000	:	
	:	
For: A Yard Performance Model Based on Task Flow Modeling	:	

CERTIFICATE OF MAILING

I certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on Apr 20, 2001.

Robert B. Reeser III
Reg. No. 45,548

PRELIMINARY AMENDMENT

Hon. Assistant Commissioner for Patents
Washington, D.C. 20231

Please enter the following amendment prior to publication and examination of this application.

IN THE SPECIFICATION

Please delete the paragraph on page 6 starting at line 8, ending at line 21, and beginning with the words, "Each of valves 84," and substitute therefor the following paragraph.

Each of valves 84, 88, 92, 96, 100, 104 and 108 denote a task flow modulation associated with a modulating agent. Inbound flow valve 84 is effectively opened for inflow by the T-Plan, and surge yard reservoir 60 must be prepared to accept the increase in level. Surge-to-receiving flow valve 88 is modulated by the need to move railcars from surge yard reservoir 60, and the

availability of an engine crew to effect that action. Receiving inspection (RI) flow valve 92 is modulated by the availability of a carman to perform inspections and a hostler for removing power from incoming trains. Classification or bowl flow valve 96 is modulated by engine crews and a pin puller, who are actively moving railcars from receiving yard reservoir 68 to bowl reservoir 72. Departure flow valve 100 is modulated by longfielder(s) and engine crew(s). Departure inspection (DI) flow valve 104 is modulated by brakemen and hostler(s) who couple and inspect brakes and attach power to the trains. Finally, outbound flow valve 108 is modulated by the T-Plan departure schedule for the yard.

Please delete the paragraph starting on page 13, at line 12, ending on page 14, at line 2, and beginning with the words, "Figure 6 shows", and substitute therefor the following paragraph.

Figure 6 shows flow chart 350 of the yard performance model. The model is best described by partitioning the performance model into submodels. Once initial conditions, such as train schedules 354, initial backlogs 358, yard topology 362 and labor assignment 366 are input, the model calculates 370 the initial task flow rates based on an initial state as input by the user. A user, such as a yard master, utilizes user interface 22 and display console 18 (shown in Figure 1) to access to all parameters of the model, except the non-user specified parameters discussed above, and may modify the default parameters either by editing during program execution, or by recalling previously saved files for train schedules and yard parameters. T_0, of the initial state is the clock time at the yard in which the simulation begins. Next, the model updates 374 task backlog of each of the five tasks discussed in relation to Figure 2 above, and computes or modifies 376 task flow rates. For example, the model advances cars to the next task, based on the flow rates in effect. This process begins with train departures, and works backward to the beginning of the yard. The task flow rates are updated in accordance with the varying yard conditions. Task backlog updates and task flow rate updates are done on a time increment of fifteen minutes, so that each task moves a corresponding number of cars to the next task. After each task backlog is updated, flow rates are updated, according to one or more flow modulating effects, such as, modifying 378 engine crew task rates, modifying 382 all task rates,

and activating 386 a new labor mix. At the end of each task flow rate update, the time is checked 390, and, if it equals the end time of the simulation, the update loop ceases 394 and outputs the graphics shown in Figures 4 and 5 to display console 18 (shown in Figure 1).

Please delete the paragraph on page 26 starting at line 10, ending at line 25, and beginning with the words, "Each engine crew", and substitute therefor the following paragraph.

Each engine crew operates between two subyards, and if both of those subyards are congested, the congestive effects of both subyards are applied as multiples to the nominal engine crew contribution to the task. Thus, the values $U_1(t), \ldots U_5(t)$ are themselves products of two subyard congestion factors. Although the entire yard is divided into six subyards in the flow model, the RI and DI subyards do not create congestion effects, since the backlogs in these yards are not directly related to the physical capacity for car storage in any physical subyard. For each of the physical subyards, let

$F_1(L_1(t)/C_1)$ = congestion factor for the surge yard at time t,
$F_2(L_2(t)/C_2)$ = congestion factor for the receiving yard at time t,
$F_4(L_4(t)/C_4)$ = congestion factor for the classification yard at time t, and
$F_5(L_5(t)/C_5)$ = congestion factor for the surge yard at time t.

Remarks

The requested amendment to the Specification, as shown above, is primarily for publication purposes and not for patentablilty purposes. Extraneous text that is not necessary for an understanding of the invention has been deleted from the amended paragraphs, no new text has been added, therefore no new matter has been added. In accordance with 37 C.F.R. 1.215, an electronic copy of the application is being transmitted concurrently with this Preliminary Amendment, utilizing the PTO Electronic Filing System. Submitted herewith is a marked up version of the paragraphs amended in accordance with the requested amendment to the Specification, shown above.

Applicant requests entry of the forgoing amendment prior to publication and examination of this application. Favorable action is respectfully solicited.

Respectfully Submitted,

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Robert B. Reeser III
Reg. No. 45,548

SUBMISSION OF MARKED UP PARAGRAPHS

Hon. Assistant Commissioner for Patents
Washington, D.C. 20231

Submitted herewith are marked up paragraphs in accordance with 37 C.F.R. 1.121(b).

IN THE SPECIFICATION

Please amend the paragraph on page 6 starting at line 8, ending at line 21, and beginning with the words, "Each of valves 84," as follows:

Each of valves 84, 88, 92, 96, 100, 104 and 108 denote a task flow modulation associated with a modulating agent. Inbound flow valve 84 is effectively opened for inflow by the T-Plan [**(PLEASE EXPLAIN T-PLAN)**], and surge yard reservoir 60 must be prepared to accept the increase in level. Surge-to-receiving flow valve 88 is modulated by the need to move railcars from surge yard reservoir 60, and the availability of an engine crew to effect that action. Receiving inspection (RI) flow valve 92 is modulated by the availability of a carman to perform inspections and a hostler for removing power from incoming trains. Classification or bowl flow valve 96 is modulated by engine crews and a pin puller, who are actively moving railcars from receiving yard reservoir 68 to bowl reservoir 72. Departure flow valve 100 is modulated by longfielder(s) and engine crew(s). Departure inspection (DI) flow valve 104 is modulated by brakemen and hostler(s) who couple and inspect brakes and attach power to the trains. Finally, outbound flow valve 108 is modulated by the T-Plan departure schedule for the yard.

Please amend the paragraph starting on page 13, at line 12, and ending on page 14, at line 2, and beginning with the words, "Figure 6 shows", as follows:

Figure 6 shows flow chart 350 of the yard performance model. [**(PLEASE VERIFY CHANGES TO FIGURE 6 ARE CORRECT IN ACCORDANCE WITH THIS PARAGRAPH AND THE NEXT)**] The model is best described by partitioning the performance model into submodels. Once initial conditions, such as train schedules 354, initial backlogs 358, yard topology 362 and labor assignment 366 are input, the model calculates 370 the initial task flow rates based on an initial state as input by the user. A user, such as a yard master, utilizes user interface 22 and display console 18 (shown in Figure 1) to access to all

parameters of the model, except the non-user specified parameters discussed above, and may modify the default parameters either by editing during program execution, or by recalling previously saved files for train schedules and yard parameters. T_0, of the initial state is the clock time at the yard in which the simulation begins. Next, the model updates 374 task backlog of each of the five tasks discussed in relation to Figure 2 above, and computes or modifies 376 task flow rates. For example, the model advances cars to the next task, based on the flow rates in effect. This process begins with train departures, and works backward to the beginning of the yard. The task flow rates are updated in accordance with the varying yard conditions. Task backlog updates and task flow rate updates are done on a time increment of fifteen minutes, so that each task moves a corresponding number of cars to the next task. After each task backlog is updated, flow rates are updated, according to one or more flow modulating effects, such as, modifying 378 engine crew task rates, modifying 382 all task rates, and activating 386 a new labor mix. At the end of each task flow rate update, the time is checked 390, and, if it equals the end time of the simulation, the update loop ceases 394 and outputs the graphics shown in Figures 4 and 5 to display console 18 (shown in Figure 1).

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$F_4(L_4(t)/C_4)$ = congestion factor for the classification yard at time t, and

$F_5(L_5(t)/C_5)$ = congestion factor for the surge yard at time t.

[(PLEASE CLARIFY IF THE LAST EQUATION SHOULD HAVE SUBSCRIPTS OF '6' AND SAY "FACTOR FOR THE DEPARTURE YARD")]

Respectfully Submitted,

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